

disinfecting stations as prophylactic and public health measures.

11. Universities should be encouraged to provide in their medical schools facilities for the proper teaching and training of medical practitioners in industrial medicine.

To these might be added a recommendation that physicians engaged in industrial medicine and welfare work, backed by employers of labor in any and all branches, might well form and hold annual conferences with officials and representatives of labor to insure uniformity of reports and records and promote further action on the various other subjects pertinent to industrial hygiene.

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DISCUSSION

J. L. POMEROY, M. D. (330 North Broadway, Los Angeles).—California, so largely in times past an agricultural state except in the vicinity of the larger cities, is now undergoing a rapid change to industrial centers. It is time that study is given to this problem. Doctor Hassler has laid out a splendid plan for developing industrial medicine and industrial hygiene. In the Los Angeles County Health Department we have under consideration the opening of a division of industrial medicine and hygiene to take special care of this problem. While conditions differ in different parts of California and the character of industries is somewhat different, there is no question whatever that special attention should be paid to industrial diseases.

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JOHN J. SIPPY, M. D. (San Joaquin Local Health District, Stockton).—Our old ideas that industrial hazards were limited to the mechanical trades are vanishing, as evidenced by more and more liberal interpretation of employers' liability laws. Doctor Hassler has indicated need of still wider scope in such enactments, as well as of more intensive education of both employer and employee. His comment that if "industrial physicians were hired by brawn and muscle instead of by the employing company or corporation" is pertinent, especially when one views the variation of concern felt for the health of the employee by the companies who operate health and hospital associations in conjunction with employees, and those which do not. California has a serious problem in the itinerant laborer in that responsibility for his welfare is hard to fix upon any county or municipality. Undoubtedly, on account of the brevity of employment of so many of these persons, physical examinations and observations would prove an economic burden upon either employees or employers, even granting the remote notion that they might be brought to perceive the ethics of the procedure. Undoubtedly the state will eventually assume some such responsibility, either directly or by delegation of authority to county and city. Certainly the latter units must seek some such remedy if expenditures for hospitals and social relief activities are to be curtailed. It is a nice problem for joint solution by the physicians, health officials, and welfare workers.

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ROSCOE N. GRAY, M. D. (333 Pine Street, San Francisco).—Uniform records of morbidity must be developed and careful studies made to determine how we may best proceed to put Doctor Hassler's suggestions into practical operation. He has pointed the way, groping through the darkness of our limited knowledge, but he would be the first to agree that even his trained mind is handicapped by inexact information, leading to recommendations which may not all be practical. He therefore pleads that uniform records be adopted, physical surveys of those at work be made to develop standards of health, and the results of these studies be published for the benefit of society. Such must be done before safe progress may be made.

To encourage the scope of social service and industrial welfare bodies and to provide medical, dental

and nursing service in all places of employment cannot be done without a very close approach to state medicine. I do not believe we are ready to lose our individual identity through paternalistic provision of such service by our employers. A better plan than that developed in Great Britain and Germany must be found before we can successfully go too far with providing compulsory medical service in all places of employment.

It seems strange, when compensation laws are in force in nearly every state, and it is accepted that the best industrial medical work requires special thought and training, that so little effort is made by our medical schools to teach industrial medicine. The industrial surgeon is a specialist with no school for special training other than "The College of Hard Knocks."

How far the state may safely enforce compulsory education in industrial and home hygiene cannot be determined. To even approach worthwhile education would require a tremendous addition to our present teaching institutions. I doubt if such education should be applied through compulsion to men and women until we have so taught our children. Children are easier to teach, and the facilities are at hand. Why not use them more fully to teach home and industrial hygiene?

Physical examination will undoubtedly uncover many conditions that ultimately lead to untold suffering, but who is to pay for compulsory examinations to be made at least yearly? The cost would be millions annually. Is the cost to be assessed against industry, the individual, or the state? Vastly increased policing is the price of compulsory health cards before employment to insure that the diseased do not avoid the law. More thought must be given to the problem of placing those physically not fitted to the occupation they desire to follow. Otherwise compulsory health cards before employment will start a hornet's nest of injustice and discontent.

We should request Doctor Hassler to submit specific legislation leading to disinfecting stations in large cities as a public health measure. His brief for their necessity seems unanswerable and he is entitled to the backing of the medical profession in securing the passage of such legislation at an early date.

THE LURE OF MEDICAL HISTORY

THE STORY OF DIGITALIS

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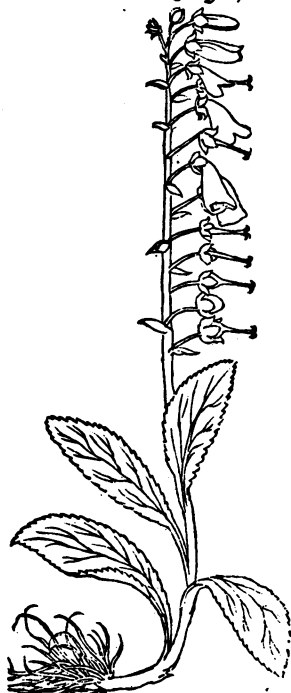
NO medicinal plant has been more fortunate in its introduction to general use, and none more lauded, abused and discredited than the foxglove. It was first described in *Campanula sylvestris* (Waldglocke), by Hieronymus Bock in 1539. It was named *Digitalis purpurea* in 1542 by the botanist and professor of medicine, Fuchs, of Tübingen. The word "foxglove" occurs in English herbals as far back as the eleventh century Saxon "Leechbook." The plant was primarily used for external application, although it had some reputation in the cure of scrofula, cough, and epilepsy. However, by 1770 it seems to have been widely used, chiefly by laymen, in certain parts of England for treating dropsies. Hearing of such cures, William Withering of Birmingham began prescribing the drug to his patients, but toxic symptoms caused him to hesitate in continuing its use. Often, with drugs used by quacks, the cure of some prominent person leads to intensive study by competent physicians. It was such a cure of hydrops pectoris in the principal of Brazen Nose College, Oxford, that led Withering to continue his investigations on digitalis. His friends also took up the drug for the treatment of dropsical

patients; its use was begun at Edinburgh in 1779 and it was included in the pharmacopeia there in 1783.

Mr. Charles Darwin, uncle of the great naturalist, had learned of this use of digitalis, and his posthumously published papers contain the first account of its curing dropsy. They appeared in print in 1780, one year after his death at the age of twenty, and were abstracted in 1783 in the *Medical Commentaries*. The case there described is of particular interest since the patient had been seen in consultation by Withering, who ordered the digitalis.

In 1785 appeared William Withering's "An Account of the Foxglove and Some of Its Medical Uses: with Practical Remarks on Dropsy, and Other Diseases." With this book Withering, an experienced physician and botanist, had produced the world's therapeutic classic. The modesty, caution and accuracy of this presentation are all equally remarkable. He says, "It would have been an easy task to have given select cases, whose successful treatment would have spoken strongly in favor of the medicine. I have, therefore, mentioned every case in which I have prescribed foxglove, proper or improper, successful or otherwise." He laid down intelligent advice on dosage and exhibition of the drug: "Let it be continued until it either acts on the kidneys, the stomach, the pulse, or the bowels; let it be stopped on the first appearance of any one of these effects." His usual dose was one to three grains of powdered leaf per day. While we may smile at some of the diseases he benefited with it, we can agree with his main conclusion: "It seldom succeeds in those with a tight and cordy pulse. On the contrary, if the pulse be feeble or intermitting, we may expect the diuretic effects to follow in a kindly manner." Case 4 of his series of 160 patients is apparently the one included in Charles Darwin's account. Withering states her "pulse was extremely weak and irregular," after digitalis it became "more full and more regular." He concluded that digitalis "has a power over the motion of the heart, to a degree yet unobserved in any

Digitalis purpurea.
Brauner Fingerhut.



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Digitalis purpurea, from the earliest woodcut, first volume of "De Stirpium Historia" of Leonhart Fuchs. This book, dedicated to Anthony Fugger, was printed in 1542 and reprinted in 1545. The blocks were used for numerous botanical and medical works in the next thirty years.

other medicine, and that this power may be converted to salutary ends."

Three years before this book, Saunders had written an account of cures of consumption by digitalis. The difficulty of differential diagnosis between phthisis and mitral heart disease, in the days when even inspection of the thorax was rarely practiced, is obvious. We must not be surprised that Withering's work was largely ignored and for twenty years most reports on digitalis dealt with its effects on phthisis. Regular and miraculous cures were reported, particularly about 1792 and 1799-1802, with a hiatus along toward 1797, when the drug was wholly neglected. The discoverers were hailed as equal to Harvey, and one author concluded that "consumption will henceforward as regularly be cured by the foxglove, as ague by Peruvian bark." At this time began the discussion, still warmly argued, as to whether digitalis was a circulatory stimulant or sedative. Ferriars first urged the latter, Beddoes, who had measured pulse pressure with a rude device, the former theory of its action.

In 1807 William Hamilton gave a review of the history of the drug, together with his success in giving it to patients with scarlatinal nephritis, phthisis, dropsy, but more particularly in cases of hydrothorax. He followed Withering closely in his work and stressed the importance of Withering's book. Like the latter, Hamilton regarded hydrothorax as distinguished not only by orthopnea, but by "the intermission and irregularity of the pulse—the most marked and common symptom." Withering too had thought hydrothorax to be usually curable with foxglove.

In the same year appeared a treatise "proving that the Medicinal Properties of the Digitalis are diametrically opposite to what they are believed to be." This work, by "James Sanders, one of the Presidents of the Royal Medical and Royal Physical Societies of Edinburgh," proved that digitalis, in two thousand observations, had accelerated the pulse and stimulated the heart. It was translated into many languages and seriously debated for half a century by Continental authors. I fear they overlooked the scorching review of this book in the *Edinburgh Medical and Surgical Journal*, for they would have learned that Sanders was a medical student, whose observations were made at student "digitalis parties," and who is contrasted by the reviewer with "those weak minds, Cullen, Darwin, Rush, Willis." "His hopes are raised, his imagination is excited by the prospect of being the champion of truth, against error sanctioned by great names." Fifteen years later the stimulant theory of digitalis action was revived by Joeg, a Leipsic obstetrician, who observed in himself and fellow members of a club, marked aphrodisiac and cardiac augmentation after minute doses of the drug.

In the main we may conclude that for a century after Withering's first observations, digitalis was considered a cardiac sedative and, except for Hamilton and Blackall (1811), there were no records of intelligent use. Some, like Laennec, considered it of little value, others of the great

clinicians—Hope, Latham, Stokes, Flint, Walshe—used it fearfully in ineffectual doses. In France, Germany, and Italy its successful use was occasionally reported. Traube confirmed Blake's observation that it raised blood pressure, but considered it a sedative which diminished blood flow and oxygenation. About 1870, as we may see by comparing the first and second editions of Flint's (1859 and 1870) and Walshe's (1862 and 1874) treatises on heart disease, the rôle of digitalis as a cardiac tonic became firmly established. Walshe, acknowledging the error of his earlier views, points to Withering's remarks on the difference in effect of digitalis on the "tight and cordy" and the "feeble and intermitting" pulse as proving that Withering had known from the start that digitalis' stimulant action alone is important in the cure of disease. Not until the work of Cushny and James MacKenzie was it realized that digitalis does not act on all patients in the same way, but slows the pulse most brilliantly in those who have auricular fibrillation. Only after this was it possible to investigate its effect on heart failure uncomplicated by arrhythmia.

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CLINICAL NOTES, CASE REPORTS AND NEW INSTRUMENTS

TULAREMIA*

REPORT OF CASES

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THE following is a report of two cases of tularemia, the first of which was seen at the San Diego County General Hospital, and the second at the Rees-Stealy Clinic.

REPORT OF CASES

CASE 1.—The first patient was a young man, age eighteen years, and single, who worked on a dairy farm, but had no contact with any of the animals. He was admitted to the hospital on July 10, 1928, complaining of a swollen eye, large masses on the left side of face and neck, a painful left ear, and painful swallowing. This condition had its onset two weeks prior to admission, and began with swelling of the lids of the left eye. The swelling increased progressively and rapidly for three days, at which time he noticed small lumps in front of the left ear, just at the angle of the left jaw and on the left side of the neck. On July 3 he had chilly sensations, cold sweats, and a fever. He did nothing to relieve the condition of the eye, but he took numerous hot drinks to relieve the chilly sensations, with considerable success.

Upon investigation it was discovered that the patient had been hunting rabbits and squirrels in the Mission Hills of San Diego, and on about the third day of this hunting trip, which lasted one week, the present illness had its onset as described. He caught many rabbits and squirrels, all of which he and his younger brother dressed; the squirrels were fed to their house cat, and the rabbits were used as food for the family. The patient does not remember having injured either

his eye or his hands during that week of hunting and dressing these animals, and does not remember splashing any of the animals' blood into his eyes.

No symptoms referable to the cardiorespiratory, gastro-intestinal or genito-urinary systems were present. There was no history of gonorrhea or lues. The patient had had the usual childhood diseases and when in the grade schools had had a condition of the right eye which he himself thought to be "pink eye." Other than this he had never had any difficulty with his vision. The family history was negative.

Physical examination showed a young man well developed, well nourished and of good mentality. The temperature was 102.6 degrees, the pulse 96, of good quality and regular, the respiration 22, and not labored. The right eye, nose, and right ear were negative.

The upper and lower lids of the left eye were extremely swollen and injected, and the eye completely closed and exuding a muco-watery secretion. The conjunctival covering of the eyeball was extremely injected and swollen, but the cornea and iris remained entirely uninvolved; the pupil was normal in size and reaction. Eversion of the eyelids revealed on the palpebral conjunctiva, many deep, round, yellow necrotic ulcers. These ulcers had a punched-out appearance and varied from one millimeter to five millimeters in size. They ran down almost to the tarsus and were noted also over the upper and lower tarsi. The surrounding conjunctiva was a deep red color, soggy and swollen, but did not bleed when wiped with a wet cotton sponge.

The mouth, teeth, and tongue were negative. The left tonsil was injected and showed several small ulcerations like those in the eye. The pharynx and tonsillar pillars on the left side were also injected.

The left preauricular lymph gland was the size of a cherry and tender to the touch. The external auricular canal of the left ear was clear but somewhat narrowed by the pressure of the gland. On the skin over the left zygomatic bone and arch were six small pustules. The superficial cervical lymph glands at the angle of the left jaw were somewhat matted together, about the size of a hen's egg and extremely tender, but did not fluctuate. The left axillary glands were small but palpable. There were no other glandular enlargements.

The liver and spleen were not palpable and the remainder of the examination was entirely negative. There were no ulcerations on the hands or extremities.

Laboratory findings showed the urine to be negative throughout. White blood count was 15,200. A differential count showed: polymorphonuclears, 65 per cent; lymphocytes, 31 per cent; and large mononuclears, 5 per cent. The Wassermann was negative.

A smear from the left eye, taken on the day of admission to the hospital, was negative for any organisms. On July 18, 1928, blood from the patient, sent to the United States Public Health Center for agglutination, was reported positive for tularemia.

On July 24, 1928, the preauricular gland was aspirated and about two cubic centimeters of brownish colored pus obtained, part of which was used for a culture and part injected into the abdomen of a rabbit. Smear from this pus was sterile. On August 7, 1928, the rabbit was killed. It showed no symptoms of illness, and examination revealed no pathological lesion.

On August 15, 1928, the preauricular gland was opened and a rubber drain inserted. The gland discharged a brownish colored pus for several days and then healed completely.

The patient had no more trouble and was discharged as cured. One month later the patient returned to the clinic for observation, and was found to be in satisfactory condition.

CASE 2.—The second patient was a man, sixty-nine years of age, who scratched his left thumb while dress-

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